

ACTUARIAL VALUATION
OF THE
CONNECTICUT STATE EMPLOYEES
RETIREMENT SYSTEM
AT
JUNE 30, 1989



Milliman &
Robertson, Inc.
Consulting Actuaries

MILLIMAN & ROBERTSON, INC.
CONSULTING ACTUARIES

THREE CORPORATE PLACE
BLOOMFIELD, CONNECTICUT 06002
203/243-1138

November 10, 1989

State of Connecticut
State Employees Retirement Commission
55 Elm Street
Hartford, CT 06106

Re: Connecticut State Employees Retirement System

Members of the Commission:

At your request, we have made an actuarial valuation of the Connecticut State Employees Retirement System as of June 30, 1989. The results of the valuation are contained in the following report.

In Section I we present a summary of the principal results of this valuation. Details regarding system assets, liabilities, and costs are found in Sections II, III, and IV, respectively. The Appendices contain information regarding Entry Age Normal Results, System membership, an outline of the benefit provisions, and a description of actuarial methods and assumptions employed in this valuation. Finally, in Appendix E, we present details of cost increases associated with recent benefit improvements effective following the valuation date.

As summarized in Section IV, the recommended contribution for the fiscal year beginning July 1, 1990, including Federal reimbursements, is \$398,016,908.

November 10, 1989

Re: Connecticut State Employees Retirement System

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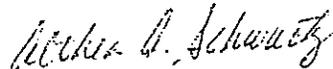
In our opinion, this report fairly presents the financial and actuarial position of the Connecticut State Employees Retirement System at June 30, 1989. On the basis of the foregoing, we hereby certify that, to the best of our knowledge, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices set forth by the American Academy of Actuaries.

Respectfully submitted,

MILLIMAN & ROBERTSON, INC.



Eugene M. Kalwarski, F.S.A.
Consulting Actuary



Althea A. Schwartz, F.S.A.
Consulting Actuary

Actuarial Valuation of the
Connecticut State Employees
Retirement System

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Section I

Executive Summary

Section I Executive Summary

This report presents the results of our June 30, 1989 actuarial valuation of the Connecticut State Employees Retirement System.

The major findings of the valuation are summarized in the following table (results based on Projected Unit Credit Funding):

| | Valuation Date | |
|------------------------------|----------------------|----------------------|
| | <u>June 30, 1989</u> | <u>June 30, 1988</u> |
| Market Value of Assets | \$2.80 billion | \$2.27 billion |
| Actuarial Value of Assets | 2.61 billion | 2.19 billion |
| Unfunded Actuarial Liability | 2.46 billion | 2.36 billion |

| | Projected to Fiscal Year Beginning | |
|---------------------------|---------------------------------------|---------------------|
| | <u>July 1, 1990</u> | <u>July 1, 1989</u> |
| System Contributions | | |
| • as a percent of payroll | 20.77% | 20.63% |
| • dollar amount | \$398.0 million | \$354.4 million |

Each of the current year's figures differs from that which would have been expected, based on the prior year's results. Details of this experience and additional findings of our valuation are presented later in this section.

There were several unusual circumstances which have been reflected in the development of costs for Fiscal Year beginning July 1, 1990. They are displayed in the table which follows and are described below:

| | Amount (\$ in millions) | % of Payroll |
|---|----------------------------|--------------|
| Annual Contribution (EAN Cost Method before adjustments) | \$ 422.6 | 22.05% |
| Effect of Change in Cost Method (EAN to PUC) | (39.7) | (2.07) |
| Effect of Change in Benefits (Arbitrators Award) | 10.2 | 0.53 |
| Effect of Retirement Incentive (Early Retirement Window) | 0.0 | .00 |
| Effect of Shortfall in State's Contribution for Fiscal Year beginning July 1, 1989 | 4.9 | 0.26 |
| Recommended Contribution for Fiscal Year beginning July 1, 1990 | \$ 398.0 | 20.77% |

- The cost method has been changed from the Entry Age Normal Cost Method to the Projected Unit Credit Cost Method. In the above table, the effect of the change in cost method was developed assuming the change was reflected for the first time for Fiscal Year beginning July 1, 1990.
- The Arbitrator's Award contained several benefit improvements which resulted in increased costs.
- Approximately 3,000 employees retired early in response to the retirement incentive program.
- The actuarial certification for Fiscal Year beginning July 1, 1989 called for a contribution of \$396.4 million. As a result of a preliminary estimate of \$55 million in savings to switch to Projected Unit Credit funding, the State appropriated \$341.4 million. Actual Projected Unit Credit costs were \$354.4 million, resulting in a \$13 million shortfall. In the above table, the \$4.9 million cost reflects the amortization of both the \$13 million shortfall and the cost associated with the change to Projected Unit Credit Funding for Fiscal Year beginning July 1, 1989.

Overall System Experience

The overall experience of the System was slightly less favorable than expected, based on the actuarial assumptions used in the 1988 valuation.

The primary factors which contributed to the change in the System's assets, unfunded liabilities, and contributions between June 30, 1988 and June 30, 1989 were: (1) expected changes due to the passage of time (e.g. new employees) and (2) unexpected changes due to experience gains and losses. In the absence of performing a formal experience review of the System we estimate the source of changes as follows.

Assets:

Between June 30, 1988 and June 30, 1989, the assets of the System, measured on an actuarial basis, increased by \$422 million. This change was attributable to the following:

| | |
|----------|---|
| \$ 403 | million from State, Federal, and employee contributions |
| - 195 | million from payment of benefits and expenses |
| + 214 | million from recognized investment experience |
| = \$ 422 | million total increase in assets. |

Of this total change, \$391 million was expected, based on our assumption that the assets of the System would earn 8½%. However, the effective investment return on the actuarial value of the assets was about 9.35%, resulting in an actuarial gain of \$31 million.

On a market value basis, the assets of the System earned 13.40%, producing a gain of \$128 million.

Unfunded Actuarial Liability (Projected Unit Credit):

The actual increase in the unfunded actuarial liability of the System between June 30, 1988 and June 30, 1989 was \$98.8 million. This difference of \$167.6 million is attributable to the following factors:

| | |
|--|-------------------|
| Unfunded Actuarial Liability, June 30, 1988 | \$2,361.2 million |
| • decrease due to asset gain | (31.0) |
| • increase due to liability and other losses | <u>129.8</u> |
| Unfunded Actuarial Liability, June 30, 1989 | \$2,460.0 million |

For reference, the unfunded actuarial liability using the Entry Age Normal cost method was \$3180.5 million as of June 30, 1989.

The liability loss of \$129.8 million is attributable to the difference between actual and expected experience with respect to number of retirements, employment terminations, disabilities, deaths, salary increases, and new employees. Only a formal experience review can determine the particular amount each component contributed to the total liability loss.

We do know, however, that actual total system payroll on June 30, 1989 exceeded our prior year's projection to 1989 by \$41.8 million. This difference was due to a growth in total membership (when no growth was assumed), and a greater increase in average pay per member than expected.

System Contributions:

System contributions projected to the Fiscal Year beginning July 1, 1990 are \$398.0 million. This exceeds the prior year's projection of \$354.4 million by \$43.6 million.

The sources of this increase are as follows.

| | |
|---|-----------------|
| Prior year's contribution (projected to 1989) | \$354.4 million |
| • increase due to expected payroll growth to 1990 | 19.1 |
| • decrease due to asset gains | (2.7) |
| • increase due to liability losses and membership profile | 12.1 |
| • increase due to arbitrator's decision | 10.2 |
| • increase due to "early retirement window" | 0.0 |
| • increase due to shortfall in State contribution for Fiscal Year beginning July 1, 1989 | <u>4.9</u> |

| | |
|----------------------------------|-----------------|
| Contribution projected to 7-1-90 | \$398.0 million |
|----------------------------------|-----------------|

Details regarding the cost increase attributable to the arbitrator's decision are presented at the end of the report in Appendix E.

With respect to the cost of the early retirement window, our analysis shows zero cost impact. However, this is a highly uncertain estimate and cannot be verified until future experience develops with respect to replacements of employees who took advantage of this provision.

Based on the assumption that 3,000 employees will retire as a result of the window, we have estimated that the System will payout an additional \$54 million in future benefits (present value). However, the System will realize a savings by not having to make future contributions on behalf of the retiring employees. Furthermore, if these employees are never replaced by new hires, the savings will

CONNECTICUT STATE EMPLOYEES
RETIREMENT SYSTEM
PRINCIPAL RESULTS
TOTAL SYSTEMS

| | <u>June 30, 1989</u> | <u>June 30, 1988</u> |
|--|----------------------|----------------------|
| A. <u>SYSTEM MEMBERSHIP</u> | | |
| 1. Active Membership | | |
| - Number of Participants | 56,202 | 55,568 |
| - Payroll | \$1,759,543,752 | \$1,582,974,210 |
| - Average Pay | 31,307 | 28,487 |
| 2. Inactive Membership | | |
| - Number of Vested Deferred Members | 635 | 638 |
| - Number of Retired Members | 21,137 | 20,265 |
| - Annual Retired Members Benefits | \$203,854,955 | \$182,867,294 |
| - Average Annual Retired Member Benefit | 9,644 | 9,024 |
| B. <u>ASSETS AND LIABILITIES</u> | | |
| 1. Assets | | |
| - Market Value | \$2,798,932,658 | \$2,273,151,925 |
| - Actuarial Value | 2,611,498,541 | 2,189,510,979 |
| 2. Liabilities | | |
| - Retired and Deferred Vested | \$2,089,129,002 | \$1,877,614,817 |
| - Active Members (Projected Unit Credit) | 2,982,390,546 | 2,673,040,405 |
| - Total Liability | 5,071,519,548 | 4,550,655,222 |
| - Unfunded Liability | \$2,460,021,007 | \$2,361,144,243 |
| C. <u>CONTRIBUTIONS</u> (Projected Unit Credit) | | |
| 1. Contributions as a Percent of Payroll | | |
| - Normal Cost | 9.37% | 9.15% |
| - Unfunded Liability | 11.40% | 11.49% |
| - Total Contribution % | 20.77% | 20.63% |
| 2. Contribution Dollars Projected to the Following FY | | |
| - Normal Cost | \$179,549,626 | \$157,099,229 |
| - Unfunded Liability | 218,467,282 | 197,300,127 |
| - Total State Contribution | 398,016,908 | 354,399,356 |

be significantly greater than the additional benefits paid. Given the possibility that State costs could increase or decrease depending upon a highly unknown assumption regarding replacements, we chose to make no adjustments for Fiscal Year 1990-91.

Summary

During the past year, the System experienced various events which resulted in both decreases and increases in System costs. This is to be expected in future years as well since the anticipated accuracy of the actuarial assumptions are over the long term and not from year to year. Furthermore, the current actuarial funding method employed by the State (Projected Unit Credit) tends to have less stability and more sensitivity to annual experience than the prior method (Entry Age Normal). This is particularly true given the two tier benefit levels of this system.

We stated earlier that overall the System's experience was slightly less favorable than expected. The primary factors resulting in increased system costs were payroll growth, liability losses, and the benefit improvements. The first factor, payroll increases, will continue to result in increasing cost in future years, as long as payrolls increase. Liability gains and losses are expected to net out in future years (i.e. gains vs. losses). However, if a pattern of gains or losses continues over the next several years a revision in assumptions may be necessary. Finally, the effect of the benefit improvements are now a permanent part of the contribution base for the State and should generally grow with payroll.

In concluding this executive summary, we present on the following page comparative statistics and actuarial information on both the June 30, 1989 and June 30, 1988 valuations.

Section II

System Assets

Section II System Assets

In this section we present the values assigned to the assets held by the Systems. These assets are valued on two different bases: the actuarial value and the market value.

Actuarial Value of Assets:

For purposes of determining ongoing costs, the recognition of gains and losses are spread over five years. The resulting value is called the actuarial value of assets and is further adjusted as necessary so that the final actuarial value is within 20% (plus or minus) of the market value of assets.

Market Value of Assets:

For certain accounting statement purposes, System assets are valued at current market rates. These values represent the "snapshot" or "cash-out" value of System assets as of the valuation date. In addition, the market value of assets provides a reference point to compare to current accrued liabilities.

The following tables present information regarding the actuarial and market values of System assets as of June 30, 1989.

| Table | Contents |
|-------|---|
| II-1 | Market Value - Summary of Fund Transactions |
| II-2 | Market Value - Breakdown on June 30, 1989 |
| II-3 | Actuarial Value of Assets |
| II-4 | Historical Summary (Actuarial and Market) |

Market Value of Assets
Summary of Fund Transactions

Market Value July 1, 1988

\$2,273,151,925

Contributions

State
Federal
Employee

\$324,314,706
50,015,844
28,710,609

\$ 403,041,159

Investment Income

Interest and Dividends
Realized Gains
Change in Unrealized Gains

\$116,130,364
(38,282,173)
240,200,288

\$ 318,048,479

Disbursements

Benefit Payments
Employee Refunds
Expenses

\$192,959,740
2,215,969
133,196

\$ 195,308,905

Market Value June 30, 1989

\$2,798,932,658

Estimated Rate of Return

13.40%

Market Value of Assets
Breakdown on June 30, 1989

The following is the Market Value of the State Employees Retirement Fund assets as reported to us by the Retirement Division:

| | <u>Amount</u> | <u>% of Total</u> |
|--|-------------------|-------------------|
| Cash | \$ (2,377,536) | -.08% |
| Accrued Interest | \$ 3,154,061 | .11% |
| Investments | | |
| Cash Reserve Account | \$ 140,737,586 | 5.03% |
| Fixed Income | 779,571,406 | 27.85 |
| Equity | 1,180,849,504 | 42.19 |
| Contract | 1,208,500 | .04 |
| Mortgage | 13,479,316 | .48 |
| Real Estate | 408,067,732 | 14.58 |
| International Funds | 184,490,757 | 6.59 |
| Commercial Mortgage Fund | 76,700,312 | 2.74 |
| Venture Capital Fund | <u>13,051,020</u> | <u>.47</u> |
| | \$2,798,156,133 | 99.97% |
| Total Market Value of Assets June 30, 1989 | \$2,798,932,658 | 100.00% |

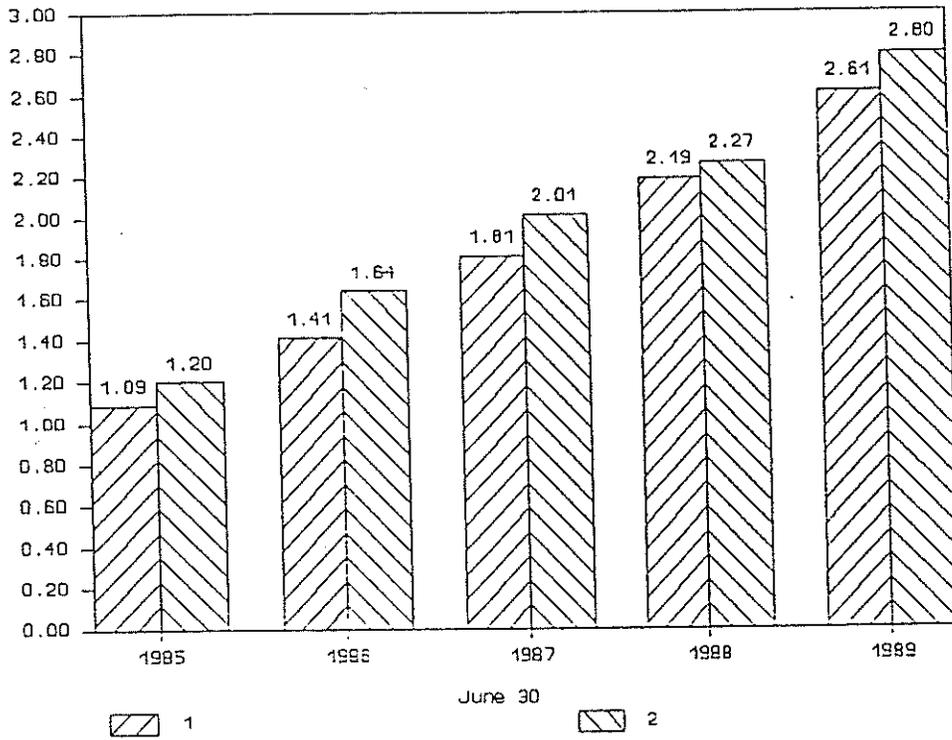
Actuarial Value of Assets

| <u>Ending</u> | <u>Realized Gains/Losses</u> | <u>Change in Unrealized Gains/Losses</u> | <u>Total Gains/Losses</u> |
|---------------|----------------------------------|--|-------------------------------|
| 6-30-89 | \$ (38,287,173) | \$240,205,288 | \$201,918,115 |
| 6-30-88 | 205,394,743 | (261,372,286) | (55,977,543) |
| 6-30-87 | 2,414,092 | 52,019,533 | 54,433,625 |
| 6-30-86 | 10,589,632 | 177,973,874 | 188,563,506 |
| 6-30-85 | 2,560,935 | 99,126,081 | 101,687,016 |

Actuarial Value of Assets as of June 30, 1989 is derived as follows:

| | | | |
|----|---|-------------------|-----------------|
| 1. | Market Value of Assets 6-30-89: | | \$2,798,932,658 |
| 2. | Five-Year Gains and Losses Not Yet Recognized: | | |
| | 80% of FY 89 | 161,534,492 | |
| | 60% of FY 88 | (33,586,526) | |
| | 40% of FY 87 | 21,773,450 | |
| | 20% of FY 86 | <u>37,712,701</u> | |
| | | | \$ 187,434,117 |
| 3. | 20% of (1) | | \$ 559,786,532 |
| 4. | Actuarial Value of Assets 6-30-89: (1) - (2), within (1) +/- (3) | | \$2,611,498,541 |
| | Estimated Rate of Return | | 9.35% |

Historical Summary of System Assets
(dollars in billions)



1 = Actuarial Value

2 = Market Value

Section III

System Liabilities and Accounting Information

Section III

System Liabilities and Accounting Information

In this section we present values assigned to the liabilities of the System and then compare these liabilities to System assets. For this valuation liabilities were measured on two different bases:

Entry Age Normal Past Service Liability:

For purposes of comparing the results of this year's valuation with the prior year, a calculation was made of the June 30, 1989 System liabilities under the previous funding method (Entry Age Normal). A more detailed description of this method can be found in Appendix D.

Projected Unit Credit Past Service Liability:

As of June 30, 1989, the actuarial funding method used to determine system costs is based on the Projected Unit Credit method. This method is also used to determine the Projected Benefit Obligation (PBO) required by the Government Accounting Standards (GASB). A more detailed description of this method can be found in Appendix D.

The tables in this section present System liabilities as follows:

| Table | Contents |
|-------|--|
| III-1 | Liabilities - Projected Unit Credit and Entry Age Normal |
| III-2 | Accounting Information (GASB) |
| III-3 | Historical Summary of System Liabilities |

Liabilities - June 30, 1989
Projected Unit Credit and Entry Age Normal

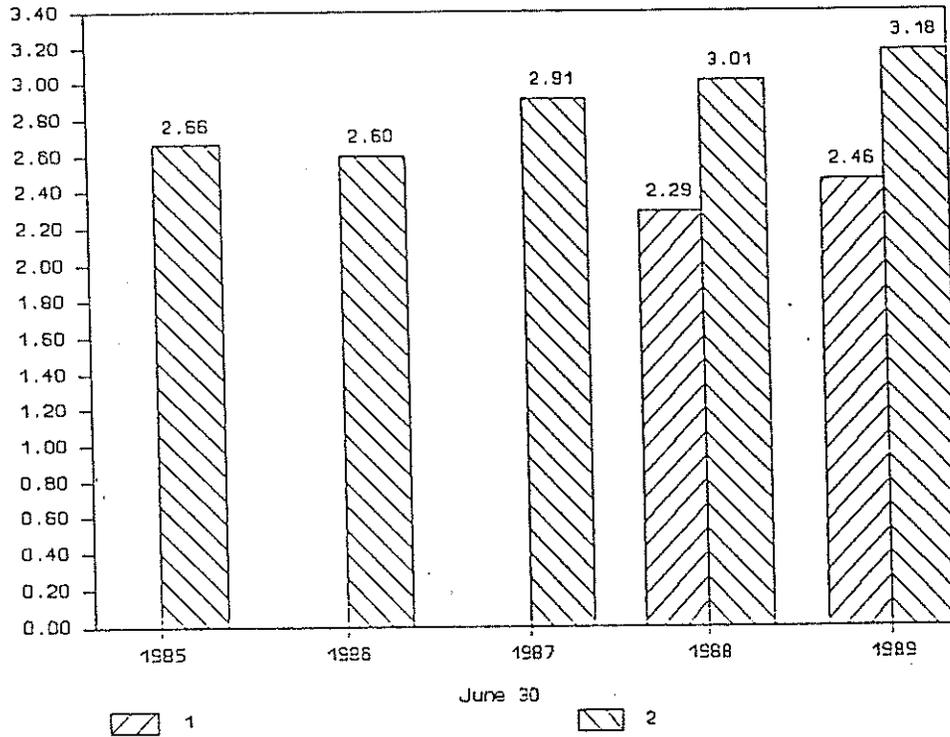
| | <u>Projected Unit Credit</u> | <u>Entry Age Normal</u> |
|---|----------------------------------|-----------------------------|
| 1. Liabilities for Retired Members | \$2,078,455,209 | \$2,078,455,209 |
| 2. Liabilities for Deferred Vested Members | <u>10,673,793</u> | <u>10,673,793</u> |
| 3. Total Inactive Liability | \$2,089,129,002 | \$2,089,129,002 |
| 4. Active Members Past Service Liability | <u>2,982,390,546</u> | <u>3,702,831,955</u> |
| 5. Total System Past Service Liability | <u>\$5,071,519,548</u> | <u>\$5,791,960,957</u> |
| 6. Actuarial Value of Assets | 2,611,498,541 | 2,611,498,541 |
| 7. Total System Unfunded Past Service Liability | <u>\$2,460,021,007</u> | <u>\$3,180,462,416</u> |

Accounting Information (GASB)

| | <u>June 30, 1989</u> |
|--|------------------------|
| 1. PBO for Retired Members | \$2,078,455,209 |
| 2. PBO for Deferred Vested Members | 10,673,793 |
| 3. Total Inactive PBO | <u>\$2,089,129,002</u> |
| 4. PBO for Active Members | |
| a. Accumulated Employee Contribution with Interest | \$ 264,154,636 |
| b. Employer-Financed Vested Portion | 2,351,656,985 |
| c. Employer-Financed Nonvested Portion | 366,578,925 |
| d. Total Active PBO | <u>\$2,982,390,546</u> |
| 5. Total System PBO | \$5,071,519,548 |

"

Historical Summary of Unfunded System Past Service Liabilities
(dollars in billions)



1 = Projected Unit Credit 2 = Entry Age Normal

Section IV

System Contributions

Section IV System Contributions

In this section we present the contributions required of the State in the upcoming fiscal year. Due to the timing of both the actuarial valuation process and the State's budget cycle, valuation results each June 30 must be projected to the following fiscal year in order to determine the State's required contribution.

For this year's valuation, the funding method has been changed to Projected Unit Credit, which is the basis for the costs shown in this section. In addition, two significant events have occurred after the valuation date (June 30, 1989) but before the end of the fiscal year which have been reflected in our cost development: (1) the benefit improvements resulting from collective bargaining, and (2) the "early retirement window" that went into effect in 1989.

In the following pages we present information on System contributions as follows:

| Table | Contents |
|-------|--|
| IV-1 | Projected Unit Credit Normal Cost to 7-1-90 |
| IV-2 | Projected Unit Credit Unfunded Liability to 7-1-90 |
| IV-3 | Projected Unit Credit Total Costs to 7-1-90 |
| IV-4 | Comparison of Normal Cost Rates |

Table IV-1

Projected Unit Credit Normal Cost Projections
to July 1, 1990

| Plan | Normal Cost % | 7-1-89 Earnings | 7-1-89 Normal Cost | 7-1-90 Projected Earnings |
|-------------------|----------------|------------------------|-----------------------|---------------------------------|
| A. Tier I | | | | |
| 1. Hazardous Duty | 19.0514 | \$89,777,004 | \$17,103,786 | \$92,829,422 |
| 2. Plan B | 10.9914 | 972,266,839 | 106,865,621 | 1,005,323,912 |
| 3. Plan C | 8.6174 | 102,160,098 | 8,803,556 | 105,633,541 |
| Total Tier I | <u>11.4046</u> | <u>1,164,203,941</u> | <u>132,772,963</u> | <u>1,203,786,875</u> |
| B. Tier II | | | | |
| 1. Hazardous Duty | 9.3785 | 61,110,594 | 5,731,265 | 71,665,615 |
| 2. All Others | 4.3529 | 534,229,217 | 23,254,486 | 640,836,272 |
| Total Tier II | <u>4.8688</u> | <u>595,339,811</u> | <u>28,985,751</u> | <u>712,501,887</u> |
| C. Grand Total | <u>9.1932</u> | <u>\$1,759,543,752</u> | <u>\$161,758,714</u> | <u>\$1,916,288,762</u> |

Normal Cost Projected to 7/1/90: $9.1932\% \times \$1,916,288,762 = \underline{\underline{\$176,168,626}}$

Projected Unit Credit Unfunded Liability
to July 1, 1990

| | | |
|----|-------------------------------------|------------------------|
| 1. | Unfunded Actuarial Liability 7-1-89 | \$2,460,021,007 |
| 2. | One Year's Interest at 8½% | 209,101,786 |
| 3. | Normal Cost | 157,099,229 |
| 4. | Interest on Normal Cost | 6,030,254 |
| 5. | Less State Payments | (291,352,627) |
| 6. | Less Federal Payments | (50,015,844) |
| 7. | Less Employee Contributions | (28,710,609) |
| 8. | Less Interest on Contributions | <u>(14,205,486)</u> |
| 9. | Unfunded Actuarial Liability 7-1-90 | <u>\$2,447,967,710</u> |

Projected Unit Credit Total Costs
to July 1, 1990

| | | |
|----|---|-----------------------|
| 1. | Unfunded Liability 7-1-90 | \$2,447,967,710 |
| 2. | Amortization Period | 36 Years |
| 3. | Amortization Payment | \$ 211,607,282 |
| 4. | State Normal Cost | <u>176,168,626</u> |
| 5. | Preliminary Total State Cost | \$ 387,775,908 |
| 6. | Projected Payroll | \$1,916,288,762 |
| 7. | Preliminary Total State Cost % | 20.24% |
| 8. | Adjustments (see Appendix E) | |
| | a. Benefit Improvements | \$ 10,241,000 |
| | b. Early Retirement Window | 0 |
| 9. | Total Required State Contribution for Fiscal Year beginning 7-1-90 | \$ <u>398,016,908</u> |

Comparison of Normal Cost Rates

| <u>PROJECTED UNIT CREDIT</u> | Valuation Date | |
|------------------------------|---------------------|---------------------|
| | <u>July 1, 1989</u> | <u>July 1, 1988</u> |
| Tier I | | |
| Hazardous Duty | 19.05% | 15.88% |
| Plan B | 10.99 | 10.82 |
| Plan C | 8.62 | 9.95 |
| Total Tier I | 11.40% | 11.22% |
| Tier II | | |
| Hazardous Duty | 9.38% | 10.86% |
| All Others | 4.35 | 4.36 |
| Total Tier II | 4.87 | 7.91 |
| <u>GRAND TOTAL (PUC)</u> | 9.19% | 9.15% |
| <u>ENTRY AGE NORMAL</u> | | |
| Tier I | | |
| Hazardous Duty | 17.93% | 15.59% |
| Plan B | 7.05 | 7.29 |
| Plan C | 6.90 | 7.18 |
| Total Tier I | 7.87% | 8.05% |
| Tier II | | |
| Hazardous Duty | 14.68% | 14.96% |
| All Others | 6.98 | 7.11 |
| Total Tier II | 7.76% | 7.91% |
| <u>GRAND TOTAL (EAN)</u> | 7.84% | 8.01% |

Appendix A

Entry Age Normal Valuation Results

Appendix A
Entry Age Normal Valuation Results

| | | <u>June 30, 1989</u> | <u>June 30, 1988</u> |
|--|--|------------------------|------------------------|
| A. <u>CURRENT RESULTS</u> | | | |
| 1. | Present Value of Future Benefits | | |
| | - Active Members | \$5,327,647,771 | \$4,867,793,255 |
| | - Retirees and Beneficiaries | 2,078,455,209 | 1,867,349,142 |
| | - Deferred Vested Members | 10,673,793 | 10,265,675 |
| | - Total Present Value | <u>\$7,416,776,773</u> | <u>\$6,745,408,072</u> |
| 2. | Present Value Future Normal Cost Contributions | \$1,624,815,816 | \$1,516,952,265 |
| 3. | Total Actuarial Liability | 5,791,960,957 | 5,228,455,807 |
| 4. | Actuarial Value of Assets | 2,611,498,541 | 2,189,510,979 |
| 5. | Unfunded Actuarial Liability | 3,180,462,416 | 3,038,944,828 |
| 6. | Total Normal Cost | 160,100,956 | 151,259,842 |
| 7. | Expected Employee Contributions | 28,071,664 | 29,868,267 |
| 8. | State Normal Cost | 132,029,292 | 121,391,575 |
| B. <u>PROJECTIONS TO FOLLOWING YEAR</u> | | | |
| 1. | State Normal Cost | \$ 150,071,194 | \$ 137,531,541 |
| 2. | Unfunded Actuarial Liability | 3,132,216,670 | 3,007,478,846 |
| 3. | Total Cost* | 422,555,181 | 396,368,471 |
| 4. | Total Cost as a Percent of Pay | 22.05% | 23.07% |

* Does not reflect adjustment for Arbitrator's Award, Early Retirement Incentives or Shortfall in State's contribution for Fiscal Year 89/90.

Appendix B

Summary Statistics on System Membership

Appendix B
Summary Statistics on System Membership

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| B. Summary of Retired Membership Data | B-3 |
| C. Analysis of Active Membership and Salary by Age and Service | B-4 |
| D. Analysis of Retired Membership and Benefits by Age and Year of Retirement | B-9 |

Summary of Active Membership Data

We received data on a total of 56,400 members, including employees of State Aided Institutions. Of the active records submitted to us, 118 (.2%) were rejected due to missing or invalid dates of birth and/or hire. Cost calculations were not revised to reflect these records. The following analysis compares this data with the July 1, 1988 data (see Exhibit B-3 for distribution by age and service).

| | <u>7-1-89</u> | <u>7-1-88</u> | <u>Change</u> | <u>Per Cent Change</u> |
|------------------------------|---------------|---------------|---------------|----------------------------|
| Total Employees | 56,202 | 55,568 | + 634 | + 1.1% |
| Total Earnings (millions) | \$1,759.5 | \$1,583.0 | +176.5 | +11.1% |
| Average Earnings | \$31,307 | \$28,487 | +2,820 | + 9.9% |

Earnings figures as of July 1 are actual amounts paid during the previous July 1 to June 30 period, adjusted for negotiated increases and merit adjustments effective through and including July 1; new entrant earnings are annualized.

These figures are broken down by Plan in the following exhibit.

Summary of Active Membership Data

(continued)

| <u>Number of Members</u> | <u>7-1-89</u> | <u>7-1-88</u> | <u>Change</u> | <u>Per Cent Change</u> |
|---|---------------|---------------|---------------|------------------------|
| Tier I State Police | 2,119 | 2,705 | -586 | -21.7% |
| Tier I Plan B | 25,882 | 26,981 | -1,099 | -4.1% |
| Tier I Plan C | 3,186 | 3,632 | -446 | -12.3% |
| Tier II Hazardous Duty | 2,050 | 1,746 | +304 | +17.4% |
| Tier II Others | 22,965 | 20,504 | +2,461 | +12.0% |
| <u>Total Annual Compensation (millions)</u> | | | | |
| Tier I State Police | 89.8 | 105.0 | -15.2 | -14.5% |
| Tier I Plan B | 972.2 | 907.2 | +65.0 | +7.2% |
| Tier I Plan C | 102.2 | 106.1 | -3.9 | -3.7% |
| Tier II Hazardous Duty | 61.1 | 47.2 | +13.9 | +29.4% |
| Tier II Others | 534.2 | 417.5 | +116.7 | +28.0% |
| <u>Average Compensation</u> | | | | |
| Tier I State Police | 42,368 | 38,812 | +3,556 | +9.2% |
| Tier I Plan B | 37,565 | 33,623 | +3,942 | +11.7% |
| Tier I Plan C | 32,065 | 29,219 | +2,846 | +9.7% |
| Tier II Hazardous Duty | 29,810 | 27,038 | +2,772 | +10.3% |
| Tier II Others | 23,263 | 20,391 | +2,872 | +14.1% |
| <u>Average Age</u> | | | | |
| Tier I State Police | 41.6 | 41.2 | +.4 | +1.0% |
| Tier I Plan B | 45.3 | 44.6 | +.7 | +1.6% |
| Tier I Plan C | 54.3 | 54.2 | +.1 | +0.2% |
| Tier II Hazardous Duty | 31.5 | 31.2 | +.3 | +1.0% |
| Tier II Others | 36.1 | 35.4 | +.7 | +2.0% |
| <u>Average Service</u> | | | | |
| Tier I State Police | 14.0 | 13.0 | +1.0 | +7.7% |
| Tier I Plan B | 14.6 | 13.6 | +1.0 | +7.4% |
| Tier I Plan C | 15.8 | 15.1 | +.7 | +4.6% |
| Tier II Hazardous Duty | 2.5 | 2.0 | +.5 | +25.0% |
| Tier II Others | 3.0 | 2.3 | +.7 | +30.4% |

Summary of Retired Membership Data

The following compares the current retired data with the June 30, 1988 data. See Exhibit B-4 for analysis of retirees by age, year of retirement, and type of retirement.

| <u>Retirees</u> | <u>7-1-89</u> | <u>7-1-88</u> | <u>Change</u> | <u>Per Cent Change</u> |
|------------------------------|---------------|---------------|---------------|----------------------------|
| Number | 21,137 | 20,265 | +872 | + 4.3% |
| Total Annual Benefit* | 203,855 | 182,868 | +20,987 | +11.5% |
| Average Monthly Benefit | 9,644 | 9,024 | +620 | + 6.9% |
| <u>Terminated Vested</u> | | | | |
| Number | 635 | 638 | -3 | - .5% |

* (000 omitted)

Analysis by Age and Service - Tier I - Hazardous Duty

Appendix B

Active Members

| AGE | YEARS OF SERVICE | | | | | | | | | | | ALL YEARS | |
|------------|------------------|---------|----------|----------|----------|----------|----------|----------|----------|----------|---------|-----------|-------|
| | UNDER 5 | 5 TO 10 | 10 TO 15 | 15 TO 20 | 20 TO 25 | 25 TO 30 | 30 TO 35 | 35 TO 40 | 40 TO 45 | 45 TO 50 | 50 & UP | | |
| UNDER 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20 TO 24 | 16 | 88 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 105 |
| 25 TO 29 | 36 | 237 | 96 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 372 |
| 30 TO 34 | 16 | 122 | 177 | 117 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 434 |
| 35 TO 39 | 14 | 70 | 81 | 216 | 87 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 473 |
| 40 TO 44 | 13 | 48 | 34 | 93 | 134 | 68 | 0 | 0 | 0 | 0 | 0 | 0 | 390 |
| 45 TO 49 | 8 | 27 | 12 | 31 | 48 | 45 | 1 | 0 | 0 | 0 | 0 | 0 | 172 |
| 50 TO 54 | 5 | 17 | 14 | 11 | 25 | 16 | 11 | 0 | 0 | 0 | 0 | 0 | 99 |
| 55 TO 59 | 0 | 9 | 11 | 2 | 5 | 6 | 13 | 0 | 0 | 0 | 0 | 0 | 52 |
| 60 TO 64 | 0 | 1 | 3 | 4 | 2 | 1 | 7 | 0 | 0 | 0 | 0 | 0 | 22 |
| 65 AND UP0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTALS | 108 | 617 | 429 | 477 | 303 | 141 | 32 | 10 | 0 | 0 | 0 | 0 | 2,119 |

| AGE | AVERAGE SALARIES | | | | | | | | | | | ALL YEARS | |
|-----------|------------------|---------|----------|----------|----------|----------|----------|----------|----------|----------|---------|-----------|--------|
| | UNDER 5 | 5 TO 10 | 10 TO 15 | 15 TO 20 | 20 TO 25 | 25 TO 30 | 30 TO 35 | 35 TO 40 | 40 TO 45 | 45 TO 50 | 50 & UP | | |
| UNDER 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20 TO 24 | 34,232 | 36,957 | 19,200 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 25 TO 29 | 35,454 | 38,832 | 40,133 | 41,860 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 36,373 |
| 30 TO 34 | 35,068 | 38,438 | 41,762 | 44,572 | 46,111 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 38,890 |
| 35 TO 39 | 32,737 | 37,405 | 42,326 | 45,309 | 44,666 | 48,414 | 0 | 0 | 0 | 0 | 0 | 0 | 41,358 |
| 40 TO 44 | 36,848 | 39,292 | 41,538 | 44,235 | 48,295 | 49,321 | 0 | 0 | 0 | 0 | 0 | 0 | 43,171 |
| 45 TO 49 | 37,891 | 38,084 | 41,638 | 45,385 | 45,814 | 49,365 | 45,355 | 0 | 0 | 0 | 0 | 0 | 45,427 |
| 50 TO 54 | 38,282 | 39,928 | 35,004 | 44,885 | 41,656 | 49,098 | 53,396 | 0 | 0 | 0 | 0 | 0 | 45,307 |
| 55 TO 59 | 0 | 41,550 | 41,016 | 50,672 | 45,505 | 40,087 | 52,451 | 52,541 | 0 | 0 | 0 | 0 | 43,720 |
| 60 TO 64 | 0 | 42,073 | 41,793 | 42,637 | 30,180 | 43,474 | 50,911 | 52,062 | 0 | 0 | 0 | 0 | 41,526 |
| 65 AND UP | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTALS | 35,343 | 38,403 | 41,191 | 44,911 | 46,132 | 48,843 | 52,217 | 52,349 | 0 | 0 | 0 | 0 | 42,368 |

Appendix B Analysis by Age and Service - Plan B

Active Members

YEARS OF SERVICE

| AGE | UNDER 5 | 5 TO 10 | 10 TO 15 | 15 TO 20 | 20 TO 25 | 25 TO 30 | 30 TO 35 | 35 TO 40 | 40 TO 45 | 45 TO 50 | 50 & UP | ALL YEARS |
|-----------|---------|---------|----------|----------|----------|----------|----------|----------|----------|----------|---------|-----------|
| UNDER 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20 TO 24 | 1 | 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 28 |
| 25 TO 29 | 52 | 858 | 104 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1,014 |
| 30 TO 34 | 150 | 1,597 | 1,303 | 78 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3,128 |
| 35 TO 39 | 148 | 1,208 | 1,990 | 847 | 68 | 0 | 0 | 0 | 0 | 0 | 0 | 4,261 |
| 40 TO 44 | 105 | 958 | 1,403 | 1,249 | 734 | 56 | 0 | 0 | 0 | 0 | 0 | 4,505 |
| 45 TO 49 | 82 | 749 | 968 | 841 | 868 | 485 | 47 | 0 | 0 | 0 | 0 | 4,040 |
| 50 TO 54 | 55 | 545 | 758 | 598 | 664 | 483 | 367 | 33 | 0 | 0 | 0 | 3,503 |
| 55 TO 59 | 32 | 407 | 664 | 464 | 566 | 333 | 278 | 98 | 2 | 0 | 0 | 2,844 |
| 60 TO 64 | 26 | 264 | 426 | 309 | 404 | 206 | 169 | 74 | 30 | 0 | 0 | 1,908 |
| 65 AND UP | 7 | 76 | 129 | 110 | 155 | 83 | 38 | 27 | 19 | 7 | 0 | 651 |
| TOTALS | 658 | 6,689 | 7,745 | 4,496 | 3,459 | 1,646 | 899 | 232 | 51 | 7 | 0 | 25,882 |

AVERAGE SALARIES

| AGE | UNDER 5 | 5 TO 10 | 10 TO 15 | 15 TO 20 | 20 TO 25 | 25 TO 30 | 30 TO 35 | 35 TO 40 | 40 TO 45 | 45 TO 50 | 50 & UP | ALL YEARS |
|-----------|---------|---------|----------|----------|----------|----------|----------|----------|----------|----------|---------|-----------|
| UNDER 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20 TO 24 | 22,537 | 21,535 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 21,571 |
| 25 TO 29 | 22,660 | 26,802 | 25,708 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 26,477 |
| 30 TO 34 | 28,485 | 30,531 | 30,788 | 30,530 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 30,540 |
| 35 TO 39 | 32,935 | 33,152 | 36,338 | 36,509 | 35,141 | 0 | 0 | 0 | 0 | 0 | 0 | 35,331 |
| 40 TO 44 | 33,352 | 34,274 | 38,475 | 42,976 | 40,234 | 39,778 | 0 | 0 | 0 | 0 | 0 | 39,013 |
| 45 TO 49 | 37,082 | 34,109 | 36,299 | 42,582 | 45,741 | 41,973 | 37,082 | 0 | 0 | 0 | 0 | 39,936 |
| 50 TO 54 | 32,537 | 34,011 | 35,471 | 41,287 | 45,871 | 47,097 | 44,091 | 40,893 | 0 | 0 | 0 | 40,719 |
| 55 TO 59 | 33,059 | 31,878 | 35,815 | 39,209 | 43,813 | 47,295 | 49,390 | 45,952 | 33,378 | 0 | 0 | 40,385 |
| 60 TO 64 | 36,936 | 30,872 | 35,838 | 38,925 | 43,434 | 47,150 | 53,271 | 51,265 | 48,014 | 0 | 0 | 40,829 |
| 65 AND UP | 33,917 | 29,494 | 34,855 | 38,701 | 42,249 | 45,078 | 44,040 | 60,663 | 52,089 | 61,007 | 0 | 40,323 |
| TOTALS | 31,817 | 31,794 | 35,462 | 40,472 | 43,647 | 45,283 | 47,087 | 48,639 | 48,958 | 61,007 | 0 | 37,565 |

Appendix B Analysis by Age and Service - Plan C

Active Members

YEARS OF SERVICE

| AGE | UNDER 5 | 5 TO 10 | 10 TO 15 | 15 TO 20 | 20 TO 25 | 25 TO 30 | 30 TO 35 | 35 TO 40 | 40 TO 45 | 45 TO 50 | 50 & UP | ALL YEARS |
|-----------|---------|---------|----------|----------|----------|----------|----------|----------|----------|----------|---------|-----------|
| UNDER 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20 TO 24 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 25 TO 29 | 2 | 23 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 33 |
| 30 TO 34 | 5 | 58 | 69 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 140 |
| 35 TO 39 | 10 | 47 | 91 | 48 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 201 |
| 40 TO 44 | 8 | 68 | 70 | 71 | 38 | 0 | 0 | 0 | 0 | 0 | 0 | 255 |
| 45 TO 49 | 4 | 61 | 87 | 68 | 54 | 11 | 1 | 0 | 0 | 0 | 0 | 286 |
| 50 TO 54 | 14 | 88 | 118 | 80 | 59 | 25 | 34 | 6 | 0 | 0 | 0 | 424 |
| 55 TO 59 | 12 | 113 | 178 | 161 | 106 | 33 | 37 | 24 | 4 | 0 | 0 | 668 |
| 60 TO 64 | 13 | 91 | 213 | 163 | 133 | 28 | 24 | 26 | 14 | 5 | 0 | 710 |
| 65 AND UP | 8 | 42 | 116 | 121 | 87 | 37 | 12 | 14 | 18 | 10 | 2 | 467 |
| TOTALS | 76 | 593 | 950 | 720 | 482 | 134 | 108 | 70 | 36 | 15 | 2 | 3,186 |

AVERAGE SALARIES

| AGE | UNDER 5 | 5 TO 10 | 10 TO 15 | 15 TO 20 | 20 TO 25 | 25 TO 30 | 30 TO 35 | 35 TO 40 | 40 TO 45 | 45 TO 50 | 50 & UP | ALL YEARS |
|-----------|---------|---------|----------|----------|----------|----------|----------|----------|----------|----------|---------|-----------|
| UNDER 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20 TO 24 | 0 | 29,158 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 29,158 |
| 25 TO 29 | 14,963 | 26,971 | 27,737 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 26,429 |
| 30 TO 34 | 22,987 | 28,974 | 27,168 | 32,986 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 28,099 |
| 35 TO 39 | 22,641 | 30,472 | 32,068 | 32,016 | 26,475 | 0 | 0 | 0 | 0 | 0 | 0 | 31,074 |
| 40 TO 44 | 34,868 | 29,711 | 31,117 | 32,999 | 31,284 | 0 | 0 | 0 | 0 | 0 | 0 | 31,408 |
| 45 TO 49 | 45,089 | 29,783 | 32,655 | 36,053 | 34,320 | 32,727 | 42,163 | 0 | 0 | 0 | 0 | 33,374 |
| 50 TO 54 | 30,979 | 28,769 | 28,891 | 36,494 | 35,790 | 41,939 | 35,002 | 28,739 | 0 | 0 | 0 | 32,586 |
| 55 TO 59 | 25,126 | 29,161 | 28,763 | 33,862 | 36,203 | 38,986 | 38,260 | 39,830 | 38,380 | 0 | 0 | 32,661 |
| 60 TO 64 | 28,621 | 29,863 | 28,593 | 30,358 | 32,607 | 34,968 | 37,950 | 45,932 | 31,934 | 41,308 | 0 | 31,272 |
| 65 AND UP | 35,279 | 30,586 | 30,492 | 31,920 | 33,943 | 36,482 | 33,620 | 57,801 | 38,872 | 41,427 | 31,396 | 33,530 |
| TOTALS | 29,212 | 29,439 | 29,674 | 33,024 | 34,053 | 37,492 | 36,686 | 44,740 | 36,119 | 41,388 | 31,396 | 32,065 |

Appendix B Analysis by Age and Service - Tier II - Hazardous Duty

Active Members

| AGE | YEARS OF SERVICE | | | | | | | | | | | ALL YEARS | |
|-----------|------------------|---------|----------|----------|----------|----------|----------|----------|----------|----------|---------|-----------|-------|
| | UNDER 5 | 5 TO 10 | 10 TO 15 | 15 TO 20 | 20 TO 25 | 25 TO 30 | 30 TO 35 | 35 TO 40 | 40 TO 45 | 45 TO 50 | 50 & UP | | |
| UNDER 20 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 20 TO 24 | 273 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 279 |
| 25 TO 29 | 711 | 61 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 772 |
| 30 TO 34 | 392 | 56 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 448 |
| 35 TO 39 | 192 | 33 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 228 |
| 40 TO 44 | 126 | 34 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 162 |
| 45 TO 49 | 72 | 11 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 85 |
| 50 TO 54 | 31 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 35 |
| 55 TO 59 | 23 | 5 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 30 |
| 60 TO 64 | 4 | 3 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 8 |
| 65 AND UP | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTALS | 1,827 | 213 | 5 | 3 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 2,050 |

AVERAGE SALARIES

| AGE | AVERAGE SALARIES | | | | | | | | | | | ALL YEARS | |
|-----------|------------------|---------|----------|----------|----------|----------|----------|----------|----------|----------|---------|-----------|--------|
| | UNDER 5 | 5 TO 10 | 10 TO 15 | 15 TO 20 | 20 TO 25 | 25 TO 30 | 30 TO 35 | 35 TO 40 | 40 TO 45 | 45 TO 50 | 50 & UP | | |
| UNDER 20 | 20,919 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 20,919 |
| 20 TO 24 | 26,053 | 26,628 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 26,066 |
| 25 TO 29 | 29,647 | 34,073 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 29,997 |
| 30 TO 34 | 30,062 | 35,550 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 30,748 |
| 35 TO 39 | 29,783 | 35,581 | 32,672 | 30,626 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 30,651 |
| 40 TO 44 | 31,020 | 31,781 | 35,841 | 37,953 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 31,252 |
| 45 TO 49 | 31,346 | 30,272 | 27,202 | 36,078 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 31,214 |
| 50 TO 54 | 28,446 | 36,276 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 29,341 |
| 55 TO 59 | 28,622 | 26,971 | 43,853 | 0 | 0 | 30,509 | 0 | 0 | 0 | 0 | 0 | 0 | 28,918 |
| 60 TO 64 | 32,873 | 32,206 | 0 | 0 | 0 | 0 | 16,125 | 0 | 0 | 0 | 0 | 0 | 30,529 |
| 65 AND UP | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTALS | 29,334 | 33,771 | 34,448 | 34,886 | 0 | 30,509 | 16,125 | 0 | 0 | 0 | 0 | 0 | 29,810 |

Appendix B Analysis by Age and Service - Tier II - All Others

Active Members

YEARS OF SERVICE

AVERAGE SALARIES

| AGE | UNDER 5 | 5 TO 10 | 10 TO 15 | 15 TO 20 | 20 TO 25 | 25 TO 30 | 30 TO 35 | 35 TO 40 | 40 TO 45 | 45 TO 50 | 50 & UP | ALL YEARS |
|-----------|---------|---------|----------|----------|----------|----------|----------|----------|----------|----------|---------|-----------|
| UNDER 20 | 328 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 328 |
| 20 TO 24 | 2,790 | 116 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2,906 |
| 25 TO 29 | 4,257 | 696 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4,955 |
| 30 TO 34 | 3,256 | 696 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3,961 |
| 35 TO 39 | 2,522 | 602 | 34 | 25 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 3,186 |
| 40 TO 44 | 2,154 | 559 | 39 | 44 | 24 | 0 | 0 | 0 | 0 | 0 | 0 | 2,820 |
| 45 TO 49 | 1,449 | 372 | 25 | 19 | 15 | 4 | 0 | 0 | 0 | 0 | 0 | 1,884 |
| 50 TO 54 | 956 | 261 | 10 | 19 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 1,253 |
| 55 TO 59 | 623 | 207 | 8 | 10 | 12 | 1 | 0 | 0 | 0 | 0 | 0 | 862 |
| 60 TO 64 | 353 | 150 | 4 | 2 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 514 |
| 65 AND UP | 163 | 118 | 6 | 4 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 296 |
| TOTALS | 18,851 | 3,777 | 137 | 123 | 68 | 6 | 0 | 3 | 0 | 0 | 0 | 22,965 |

| AGE | UNDER 5 | 5 TO 10 | 10 TO 15 | 15 TO 20 | 20 TO 25 | 25 TO 30 | 30 TO 35 | 35 TO 40 | 40 TO 45 | 45 TO 50 | 50 & UP | ALL YEARS |
|-----------|---------|---------|----------|----------|----------|----------|----------|----------|----------|----------|---------|-----------|
| UNDER 20 | 3,666 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3,666 |
| 20 TO 24 | 16,162 | 20,592 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 16,339 |
| 25 TO 29 | 23,261 | 25,853 | 19,188 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 23,624 |
| 30 TO 34 | 23,906 | 28,444 | 24,552 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 24,705 |
| 35 TO 39 | 24,778 | 28,615 | 27,028 | 31,191 | 33,556 | 0 | 0 | 0 | 0 | 0 | 0 | 25,586 |
| 40 TO 44 | 24,345 | 28,715 | 28,211 | 44,095 | 38,939 | 0 | 0 | 0 | 0 | 0 | 0 | 25,697 |
| 45 TO 49 | 23,912 | 27,676 | 36,398 | 43,520 | 40,591 | 31,811 | 0 | 0 | 0 | 0 | 0 | 25,169 |
| 50 TO 54 | 23,871 | 25,903 | 48,092 | 35,399 | 33,326 | 0 | 0 | 0 | 0 | 0 | 0 | 24,715 |
| 55 TO 59 | 21,923 | 27,388 | 27,763 | 32,358 | 31,651 | 16,239 | 0 | 52,357 | 0 | 0 | 0 | 23,575 |
| 60 TO 64 | 22,482 | 26,248 | 32,287 | 24,900 | 34,349 | 0 | 0 | 44,621 | 0 | 0 | 0 | 23,802 |
| 65 AND UP | 16,478 | 21,781 | 24,660 | 42,049 | 39,563 | 16,125 | 0 | 4,483 | 0 | 0 | 0 | 19,296 |
| TOTALS | 22,271 | 27,188 | 30,428 | 38,707 | 36,960 | 26,601 | 0 | 33,820 | 0 | 0 | 0 | 23,263 |

Analysis of Retired Members by Retirement Year

Appendix B

| RETIREMENT YEAR | SERVICE | NUMBER OF RETIREES | | | | HAZARDOUS DUTY | SERVICE | AVERAGE BENEFIT | | | |
|-----------------|---------|--------------------|----------------------------------|---------|----------------|----------------|---------|-------------------|----------------------------------|----------------|--|
| | | SERVICE CONNECTED | DISABILITY NON-SERVICE CONNECTED | SERVICE | HAZARDOUS DUTY | | | SERVICE CONNECTED | DISABILITY NON-SERVICE CONNECTED | HAZARDOUS DUTY | |
| PRE-1959 | 134 | 15 | 33 | 9 | 6,113 | 4,357 | 4,177 | 6,152 | | | |
| 1959 | 53 | 3 | 5 | 5 | 6,095 | 4,880 | 5,128 | 8,402 | | | |
| 1960 | 40 | 6 | 4 | 2 | 5,733 | 3,937 | 4,374 | 8,207 | | | |
| 1961 | 47 | 3 | 7 | 3 | 6,646 | 6,022 | 4,645 | 7,540 | | | |
| 1962 | 85 | 5 | 4 | 3 | 6,289 | 4,602 | 4,437 | 6,851 | | | |
| 1963 | 93 | 8 | 10 | 1 | 6,790 | 5,282 | 5,198 | 7,911 | | | |
| 1964 | 97 | 11 | 9 | 1 | 5,881 | 6,690 | 5,116 | 11,029 | | | |
| 1965 | 96 | 3 | 6 | 1 | 6,610 | 4,712 | 5,483 | 2,194 | | | |
| 1966 | 127 | 10 | 18 | 1 | 6,402 | 4,815 | 5,054 | 7,478 | | | |
| 1967 | 134 | 6 | 21 | 2 | 6,147 | 4,774 | 5,989 | 6,859 | | | |
| 1968 | 181 | 11 | 18 | 1 | 7,095 | 6,058 | 5,364 | 8,151 | | | |
| 1969 | 296 | 12 | 22 | 1 | 7,636 | 6,357 | 6,692 | 11,554 | | | |
| 1970 | 295 | 11 | 51 | 3 | 8,299 | 6,355 | 6,969 | 12,532 | | | |
| 1971 | 443 | 16 | 61 | 6 | 8,836 | 7,089 | 6,726 | 14,244 | | | |
| 1972 | 517 | 25 | 66 | 22 | 9,104 | 8,135 | 7,608 | 15,954 | | | |
| 1973 | 618 | 27 | 70 | 21 | 9,288 | 9,790 | 8,004 | 17,415 | | | |
| 1974 | 502 | 25 | 47 | 23 | 8,442 | 9,687 | 8,067 | 15,344 | | | |
| 1975 | 779 | 47 | 68 | 20 | 9,062 | 9,088 | 7,547 | 14,401 | | | |
| 1976 | 860 | 14 | 51 | 24 | 8,295 | 8,206 | 7,587 | 16,032 | | | |
| 1977 | 687 | 11 | 27 | 13 | 7,990 | 6,421 | 7,361 | 16,097 | | | |
| 1978 | 740 | 10 | 40 | 25 | 7,694 | 7,042 | 5,664 | 15,312 | | | |
| 1979 | 1,410 | 11 | 40 | 42 | 8,122 | 8,229 | 6,330 | 15,563 | | | |
| 1980 | 910 | 18 | 37 | 33 | 7,471 | 6,133 | 5,551 | 16,604 | | | |
| 1981 | 746 | 21 | 36 | 52 | 8,286 | 6,935 | 5,935 | 17,693 | | | |
| 1982 | 643 | 18 | 29 | 35 | 8,591 | 8,420 | 6,748 | 18,576 | | | |
| 1983 | 657 | 15 | 38 | 43 | 9,883 | 8,700 | 7,944 | 19,331 | | | |
| 1984 | 836 | 32 | 46 | 64 | 10,364 | 9,551 | 8,466 | 21,953 | | | |
| 1985 | 937 | 35 | 38 | 68 | 11,056 | 8,939 | 9,644 | 22,199 | | | |
| 1986 | 1,022 | 47 | 51 | 58 | 12,372 | 8,750 | 9,454 | 21,615 | | | |
| 1987 | 1,002 | 36 | 47 | 81 | 13,463 | 10,165 | 9,544 | 22,345 | | | |
| 1988 | 1,153 | 60 | 55 | 93 | 13,152 | 12,679 | 9,483 | | | | |
| 1989 | 683 | 2 | 11 | 65 | 13,874 | 41,880 | 9,152 | | | | |

Appendix B Analysis of Retired Members by Current Age

| AGE AT RETIREMENT | NUMBER OF RETIREES | | | | AVERAGE BENEFIT | | | |
|-------------------|--------------------|-------------------|----------------------------------|----------------|-----------------|-------------------|----------------------------------|----------------|
| | SERVICE | SERVICE CONNECTED | DISABILITY NON-SERVICE CONNECTED | HAZARDOUS DUTY | SERVICE | SERVICE CONNECTED | DISABILITY NON-SERVICE CONNECTED | HAZARDOUS DUTY |
| LESS THAN 40 | 31 | 15 | | | 12,046 | 7,270 | | |
| 40 TO 44 | 2 | 51 | 19 | | 10,638 | 12,684 | 8,230 | 22,373 |
| 45 TO 49 | | 62 | 45 | 46 | | 10,958 | 10,456 | |
| 50 TO 54 | 3 | 67 | 94 | 152 | 22,371 | 9,673 | 9,561 | 20,036 |
| 55 TO 59 | 840 | 91 | 153 | 178 | 15,302 | 8,161 | 8,909 | 19,408 |
| 60 TO 64 | 2,575 | 84 | 180 | 206 | 11,736 | 7,046 | 6,743 | 18,476 |
| 65 TO 69 | 4,113 | 68 | 181 | 132 | 10,215 | 5,930 | 6,212 | 16,577 |
| 70 TO 74 | 3,859 | 55 | 118 | 65 | 8,716 | 6,922 | 6,733 | 14,559 |
| 75 TO 79 | 2,771 | 37 | 115 | 23 | 8,357 | 8,073 | 7,179 | 11,213 |
| 80 TO 84 | 1,601 | 21 | 94 | 13 | 8,053 | 7,024 | 6,428 | 11,823 |
| 85 TO 89 | 761 | 5 | 41 | 2 | 7,180 | 4,567 | 5,491 | 7,466 |
| 90 TO 94 | 243 | 10 | | | 5,560 | | 4,541 | |
| 95 TO 99 | 55 | 2 | 1 | | 4,158 | 2,079 | 3,408 | |
| FINAL TOTALS | 16,823 | 574 | 1,066 | 817 | 9,624 | 8,605 | 7,349 | 18,233 |

Appendix C

Summary of Plan Provisions

Appendix C
Summary of Plan Provisions

CONNECTICUT STATE EMPLOYEES
RETIREMENT SYSTEM

Established September 1, 1939

Does not reflect Arbitrator's Award

1. Membership

Tier I [Sec. 5-160]: Each state employee appointed to classified service shall become a member on the first day of the pay period following permanent appointment.

Each officer elected by the people and each appointee of such officer exempt from classified service may elect to become a member, effective on the first day of the pay period following receipt of such election.

Each other state employee exempt from classified service shall become a member on the first day of the pay period following six months of employment.

Except as noted below employees hired prior to January 1, 1984 could elect (no later than January 2, 1984) to be covered under either Plan B or Plan C. Employees under contracts with Union Independent and CSEA unions hired prior to October 1, 1982 had until October 1, 1984 to make such election.

Tier II [Sec. 23]: Tier II consists of employees first joining the retirement system on or after January 1, 1984 plus employees hired between July 1, 1982 and January 1, 1984 who elected Tier II. Each state employee becomes a member on the first day of employment.

2. Normal Retirement Eligibility

State Police [Sec. 5-173 as amended by Sec. 17]: Age 47 and 20 years of service.

Tier I [Sec. 5-162]: Age 55 and 25 years of service, age 60 and 10 years of service, or age 70.

Tier II [Sec. 28 & 30]: Age 65 and 10 years of service or age 70 and 5 years of service, except hazardous duty members may retire after 25 years.

3. Normal Retirement Benefit

State Police [Sec. 5-173 as amended by Sec. 17]: 50% of Final Average Earnings plus 2% for each year in excess of 20.

Tier I Plan B [Sec. 5-162; 10]: Same as Plan C up to age 65; thereafter 1% of Final Average Earnings up to \$4,800 plus 2% of Final Average Earnings in excess of \$4,800 times years, reduced for retirement prior to age 65 with less than 25 years. Minimum benefit with 25 years, \$300 per month.

Tier I Plan C [Sec. 5-162; 10]: 2% of Final Average Earnings times years of service, reduced for retirement prior to age 65 with less than 25 years. Minimum with 25 years, \$300 per month.

Tier II Hazardous Duty Members [Sec. 30]: 2% of Final Average Earnings times years of service. Minimum with 25 years, \$300 per month (or less if retirement before 7-1-87).

Tier II All Other [Sec. 28]: 1 1/3% of Final Average Earnings plus 1/2% of Final Average Earnings in excess of the year's breakpoint*, times years of service from 10-1-82. Minimum with 25 years, \$300 per month (or less if retirement before 7-1-87).

* \$10,700 increased by 6% each year after 1982, rounded to the nearest \$100.

4. Early Retirement

State Police: None.

Tier I [Sec. 5-162]: Age 55 and 10 years of service; Normal Retirement Benefit reduced actuarially for retirement prior to age 60.

Tier II [Sec. 29]: Age 55 and 10 years of service; Normal Retirement Benefit reduced 1/2% for each month prior to age 65; Minimum benefit with 25 years, \$300 per month (or less if retirement prior to 7-1-87).

5. Deferred Retirement

Tier I [Sec. 5-162]: May be deferred but not beyond age 70.

Tier II [Sec. 28 (b) and (e)]: May be deferred but not beyond age 70. Benefit is based on salary and service to actual retirement.

6. Vesting

Tier I [Sec. 5-166 as amended in part by Sec. 13]: Ten years of service; actuarially reduced benefit payable at age 55; in addition employees are always fully vested in their own contributions (after 1-1-83, Tier I, contributions with 5% interest from 1-1-82).

Tier I Hazardous Duty [Sec. 17]: As above, but may receive full benefits at age 47 if 20 years of service at termination.

Tier II [Sec. 31]: Ten years of service or age 70 and 5 years; benefit payable at age 65 or early retirement benefit payable at age 55; minimum benefit with 25 years, payable after age 55, \$300 per month (or less if retirement before 7-1-87).

7. Member Contributions

Tier I State Police [Sec. 5-161]: 2% of earnings up to Social Security Taxable Wage Base plus 5% above that level.

Plan B [Sec. 5-161]: 2% of earnings up to Social Security Taxable Wage Base plus 5% above that level.

Plan C [Sec. 5-161]: 5% of earnings.

Tier II [Sec. 37]: None.

8. Cost of Living

[Sec. 5-162b, 5-162d, Sec. 9 & Sec. 35]: Annual adjustment each July 1 of up to 5% for retirements prior to 7-1-80; 3% for retirements after 7-1-80. For members (or beneficiaries) not covered by Social Security and age 62 and over, the maximum increase is 6%. If an actuarial surplus (as defined in the law) exists, the commission may further increase retired benefits.

9. Death Benefits

State Police [Sec. 5-146]: Survivor benefits to spouse of \$550 per month plus \$250 to a surviving dependent child (or \$575 to surviving dependent children).

Tier I [Sec. 5-165a as amended by Sec. 12]: If eligible for early or normal retirement, spouse benefit equal to 50% of average of Life Benefit and 50% J&S benefit member would have received. If not eligible to retire but 25 years, same benefit calculated as though age 55 using service and earnings at death.

[Sec. 5-168 as amended by Sec. 13]: If not eligible for retirement, return of contributions (after 10-1-82, Tier I, with interest from 1-1-82 at 5%).

Tier II [Sec. 34]: If eligible for early or normal retirement, spouse benefit equal to 50% of member's benefit under a 50% J&S. If not eligible to retire but 25 years, same benefit calculated as though age 55 using service and earnings at death.

[Sec. 36]: If death is due to employment, a spouse with dependent child(ren) under 18 will be paid \$7,500 in not less than 60 installments while living and not remarried; also \$20 per month per child under 18. If no children under 18, spouse [or dependent parent(s), if no spouse] will be paid \$4,000 in not less than 60 installments.

10. Disability Benefits

Tier I [Sec. 16]: For non-service disabilities occurring prior to age 60 and after 5 years of service, benefit equals 3% times base salary times years of service (Maximum $1\frac{2}{3}\%$ times service to 65). If disability occurs prior to age 60 and is due to service, benefit equals $1\frac{2}{3}\%$ of salary times service projected to 65 (maximum 30 years) and is payable regardless of length of service. Exception: State Police benefit is accrued benefit.

Maximum disability benefit is lesser of: 100% of salary less Workers Compensation and Social Security and less non-rehabilitation earnings or 80% of salary less Workers Compensation and Social Security. Social Security is primary plus family.

Tier II [Sec. 32]: Prior to age 65 and due to service or after 10 years of service, benefit is $1\frac{1}{3}\%$ of final average earnings, plus $\frac{1}{2}\%$ of excess earnings times service projected to 65 (maximum 30 years or service to Date of Disability if greater than 30 years). Same maximum as Tier I.

11. Optional Forms of Payment

Tier I [Sec. 11]: 50% Qualified Joint and Survivor (CA)¹.

Tier II [Sec. 33]: 50% or 100% Joint and Survivor (CA). Ten years certain and life. Twenty years certain and life. Life².

12. Part-Time Employment

[Sec. 5-162g & Sec. 27]: Service treated as if full-time for eligibility. If consistent part-time for all periods, treat as full-time. If varying schedule or some part-time, some full-time, service and salary proportionately adjusted.

¹ Normal Form if married at least 12 months.

² Normal Form if not married at least 12 months.

Appendix D

Actuarial Methods and Assumptions

Appendix D Actuarial Method and Assumptions

A. Funding Method

1. Through the 1988 valuation, the actuarial valuation method used in the cost calculations was the Entry Age Normal Cost Method. As of July 1, 1989 the actuarial valuation method used is the Projected Unit Credit Cost Method. Recommended annual contributions until the accrued liability is completely funded will consist of two pieces: Normal (or Current) Cost plus a payment towards the Unfunded Accrued Liability.
2. Under the Entry Age Normal Method:
 - a. The Normal Cost is determined by calculating the present value of future benefits for present active Members that will become payable as the result of death, disability, retirement or termination. This cost is then spread as a level percentage of earnings from entry age to termination as an Active Member.
 - b. If Normal Costs had been paid at this level for all prior years, a fund would have been accumulated. Because this fund represents the portion of benefits that would have been funded to date, it is termed the Accrued Liability. In fact, it is calculated by adding the present value of benefits for retired Members and Terminated Vested Members to the present value of benefits for active Members and subtracting the present value of future contributions.
3. Under the Projected Unit Credit Cost Method:
 - a. The Accrued Liability is determined directly as the present value of benefits accrued to date, where the accrued benefits for each Member is the pro-rata portion (based on service to date) of the projected benefit payable at death, disability, retirement or termination.
 - b. The Current Cost is then similarly determined as the present value of the portion of the projected benefit attributable to the current year.
4. The Unfunded Accrued Liability is the Accrued Liability less Current Assets.
5. Since both valuations were done as of June 30, 1989, costs have been projected to July 1, 1990 in order to correspond to the fiscal year as follows:
 - a. Normal Costs, both Entry Age Normal and Projected Unit Credit, were determined as a percentage of earnings, by Tier, as of July 1, 1989. Earnings were projected to July 1, 1990, separately for each Tier because of the shifting Tier populations, and the projected earnings were then multiplied by the normal cost factors, by Tier.

b. The Unfunded Accrued Liability was determined as of June 30, 1989, and brought forward to June 30, 1990 by adding the Normal Cost plus interest and subtracting expected employee, State, and Federal contributions, also with interest. This amount was amortized over the 36 years remaining in the original 40 year amortization period.

c. Normal Cost and Past Service Amortization payments were adjusted to reflect payment in twelve equal installments at the end of each month.

B. Actuarial Assumptions

Mortality: 1983 Group Annuity Mortality Table with ages set back 4 years for females.

Investment Return: $8\frac{1}{2}\%$.

| Salary Scale: | <u>Age</u> | <u>Annual Rate of Increase</u> |
|---------------|------------|--------------------------------|
| | 20 | 10.2% |
| | 25 | 9.2 |
| | 30 | 8.1 |
| | 35 | 7.1 |
| | 40 | 6.5 |
| | 45 | 6.0 |
| | 50 | 6.0 |
| | 55 | 6.0 |
| | 60 | 6.0 |

| Disability: | <u>Age</u> | <u>Annual Rate of Disability (Per 1000 lives)</u> |
|-------------|------------|---|
| | 20 | 0.75 |
| | 25 | 0.85 |
| | 30 | 0.97 |
| | 35 | 1.21 |
| | 40 | 1.70 |
| | 45 | 2.79 |
| | 50 | 5.09 |
| | 55 | 9.25 |
| | 60 | 14.42 |

Service connected disabilities are assumed to comprise 50% of total Disability for Hazardous Duty employees and 20% for all other employees.

Social Security Wage Base Increases:
 $3\frac{1}{2}\%$ compounded annually.

B. Actuarial Assumptions (cont'd)

Retirement Ages:

Hazardous Duty:

| <u>Age</u> | <u>First Year Eligible</u> | <u>There- after</u> |
|------------|--------------------------------|-------------------------|
| 47-50 | 50% | 10% |
| 51 | 48 | 10 |
| 52 | 46 | 10 |
| 53 | 44 | 10 |
| 54 | 42 | 10 |
| 55 | 40 | 10 |
| 56 | 38 | 10 |
| 57 | 36 | 10 |
| 58 | 34 | 10 |
| 59 | 30 | 10 |
| 60 | 50 | 30 |
| 61 | 50 | 30 |
| 62-70 | 100 | 100 |

All Others:

| | | |
|-------|-----|-----|
| 55-60 | 20% | 5% |
| 61 | 40 | 5 |
| 62 | 40 | 30 |
| 63 | 40 | 30 |
| 64 | 60 | 30 |
| 65 | 80 | 60 |
| 66 | 80 | 60 |
| 67 | 80 | 60 |
| 68 | 80 | 60 |
| 69 | 80 | 60 |
| 70 | 100 | 100 |

B. Actuarial Assumptions (cont'd)

Turnover:

Five year select and ultimate rates as shown in the Turnover Table below for non-hazardous duty males; the same table with rates increased 10% for females; the same table with rates reduced 50% for hazardous duty.

Turnover Table

| Age | Years of Participation | | | | | |
|-----|------------------------|-----|-----|-----|-----|----------|
| | 0 | 1 | 2 | 3 | 4 | 5 & Over |
| 20 | 50% | 45% | 30% | 25% | 20% | 15% |
| 25 | 45 | 35 | 30 | 25 | 20 | 10 |
| 30 | 40 | 30 | 25 | 20 | 15 | 8 |
| 35 | 35 | 28 | 20 | 15 | 10 | 6 |
| 40 | 30 | 20 | 10 | 8 | 6 | 4 |
| 45 | 20 | 10 | 8 | 6 | 4 | 2 |
| 50 | 10 | 8 | 6 | 4 | 2 | 0 |
| 55 | 10 | 7 | 5 | 2 | 0 | 0 |
| 60 | 10 | 0 | 0 | 0 | 0 | 0 |

Cost of Living Increases:

3% per year for retirees on or after 1-1-80.
4½% per year for retirees prior to 1-1-80.

Asset Valuation:

Adjusted market value: assets are written up (or down) by spreading recognition of gains and losses over five years, plus an additional write-up (or write-down) as necessary so that the final adjusted value is within 20% of market value.

Appendix E

Cost Adjustments: Re: Arbitrator's Decision

Includes only those issues having a more than minimal impact on the Trust Fund.

Appendix E
Cost Adjustments Re: Arbitrator's Decision

The recently completed pension negotiations between the State of Connecticut and the State Employees Bargaining Agent Coalition resulted in several changes to the provisions of the Connecticut State Employees Retirement System. Although these changes occurred after the valuation date (June 30, 1989), they are properly reflected in the contribution for the following fiscal year. However, issues 11 and 12 of the negotiations are not effective until after Fiscal Year 1990, and so are not included herein.

Shown below is the increase in contribution due to those issues for which the cost impact is other than minimal:

| Issue | Increase in Contribution |
|-------|--------------------------|
| 4 | \$ 90,000 |
| 9 | 1,121,000 |
| 11/12 | NA |
| 15 | 2,150,000 |
| 22 | 3,300,000 |
| 25 | 292,000 |
| 27 | 360,000 |
| 31 | 1,319,000 |
| 39.2 | 943,000 |
| 48 | 54,000 |
| 74 | 400,000 |
| 76 | 150,000 |
| 79 | <u>92,000</u> |
| | \$10,241,000 |

Details regarding the individual issues are presented on the following pages. These results were originally published in our October 3, 1989 report to the Retirement Commission.

(\$ in millions)

Issue

4 Five year REA Bridge, or length of service (whichever is greater)

Prevailing Party Agreed

| <u>Employer Costs</u> | <u>FY 90/91</u> | <u>PUC</u> | <u>EAN</u> |
|-----------------------|-----------------|-------------|-------------|
| Normal Cost | | .038 | .033 |
| Past Service Cost | | <u>.052</u> | <u>.067</u> |
| Total | | .090 | .100 |

Comments

In the future the entry age normal cost is expected to increase in proportion to Total System payroll increases. The projected unit credit normal cost is expected to increase at a slightly faster rate.

The past service cost will remain level and then cease after 36 years.

Issue

9 Eliminate Tier II Social Security Offset
 -- Limit offset to 35 year average of Social Security covered earnings
 -- Change formula to 1 and 5/8% for years beyond 35 years

Prevailing Party State

| <u>Employer Costs</u> | <u>FY 90/91</u> | <u>PUC</u> | <u>EAN</u> |
|-----------------------|-----------------|-------------|-------------|
| Normal Cost | | .758 | 1.167 |
| Past Service Cost | | <u>.363</u> | <u>.501</u> |
| Total | | 1.121 | 1.668 |

Comments

In the future the entry age normal cost is expected to increase in proportion to Tier II payroll increases (since all new entrants join Tier II, the Tier II payroll is growing by a greater rate than Total System Payroll).

The projected unit credit normal cost is expected to increase at a greater rate than the entry age normal cost.

The past service cost will remain level and then cease after 36 years.

Issues

11, 12

Note: Since issues 11 and 12 each result in a cost impact dependent on the other issue, the analysis is presented here for both issues combined.

11: Change Tier II Normal Retirement Age to 62 and 5 years of service, or 60 with 25 years

12: Reduce the early retirement benefit reduction factor from 6% to 3%

Prevailing Party SEBAC (for 11 and 12)

| <u>Employer Costs</u> | <u>FY 90/91</u> | <u>PUC</u> | | <u>combined 11 & 12</u> |
|-----------------------|-----------------|-------------|-------------|---------------------------------|
| | | <u>11</u> | <u>12</u> | |
| Normal Cost | 1.700 | 1.400 | 2.500 | |
| Past Service Cost | <u>.500</u> | <u>.400</u> | <u>.800</u> | |
| Total | 2.200 | 1.800 | 3.300 | |

| <u>FY 90/91</u> | <u>EAN</u> | | <u>combined 11 & 12</u> |
|-------------------|--------------|--------------|---------------------------------|
| | <u>11</u> | <u>12</u> | |
| Normal Cost | 2.300 | 1.800 | 3.400 |
| Past Service Cost | <u>1.000</u> | <u>0.800</u> | <u>1.500</u> |
| Total | 3.300 | 2.600 | 4.900 |

Comments

In the future the entry age normal cost is expected to increase in proportion to Tier II payroll increases (since all new entrants join Tier II, the Tier II payroll is growing by a greater rate than Total System Payroll).

The projected unit credit normal cost is expected to increase at a greater rate than the entry age normal cost.

The past service cost will remain level and then cease after 36 years.

Issue

15

Credit Tier II Service for those employed prior to 10/1/82 who chose not to be covered by Retirement System

Prevailing Party

Analysis assumes SEBAC

Employer Costs

| <u>FY 90/91</u> | <u>PUC</u> | <u>EAN</u> |
|-------------------|--------------|--------------|
| Normal Cost | 1.000 | 0.900 |
| Past Service Cost | <u>1.150</u> | <u>1.250</u> |
| Total | 2.150 | 2.150 |

Comments

In the future, the entry age normal cost shown above will change in proportion to the total payrolls of system members who chose not to be covered by the Retirement System (e.g., as these members continue to work and receive pay increases, the normal cost will increase, as these members withdraw, retire, etc. from active service the normal cost will decline, and eventually cease.)

The projected unit credit costs will increase at a greater rate than the entry age normal cost.

The past service cost will remain level and then cease after 36 years.

Issue

22

Allow one-time spousal option change for current beneficiaries and provide medical benefits for surviving spouses/dependents under 18.

Prevailing Party

SEBAC

Employer Costs

| <u>FY 90/91</u> | <u>PUC</u> | <u>EAN</u> |
|-------------------|--------------|--------------|
| Normal Cost | 0.000 | 0.000 |
| Past Service Cost | <u>3.300</u> | <u>3.300</u> |
| Total | 3.300 | 3.300 |

Comments

The past service costs shown above remain level until the unfunded past service liability is fully amortized (36 years). The estimate is based on a highly uncertain assumption that 50% of current retirees eligible to make an option change will do so. If, for example, only 10% elect an option change the figures above reduce to \$0.660.

Issue

25

Minimum Disability Coverage (60% of salary)

Prevailing Party

SEBAC

Employer CostsFY 90/91PUCEAN

Normal Cost

0.132

0.118

Past Service Cost

0.1600.207

Total

0.292

0.325

Comments

In the future the entry age normal cost is expected to increase in proportion to Total System payroll increases. The projected unit credit normal cost is expected to increase at a slightly faster rate.

The past service cost will remain level and then cease after 36 years.

Issue

27

Retiree under a disability pension would be able to receive a full pension plus workers' compensation for the eligible period

Prevailing Party

SEBAC

Employer CostsFY 90/91PUCEAN

Normal Cost

0.162

0.145

Past Service Cost

0.1980.255

Total

0.360

0.400

Comments

In the future the entry age normal cost is expected to increase in proportion to Total System payroll increases. The projected unit credit normal cost is expected to increase at a slightly faster rate.

The past service cost will remain level and then cease after 36 years.

Please note that this cost estimate is very sensitive to the actual percentage of service connected disabilities who receive benefits under Section 5-142. As a result, it is possible that these costs are overstated.

Issue

31 130% CAP on earnings which can be used to calculate retirement benefits

Prevailing Party SEBAC

| <u>Employer Costs</u> | <u>FY 90/91</u> | <u>PUC</u> | <u>EAN</u> |
|-----------------------|-----------------|-------------|--------------|
| Normal Cost | | .569 | .473 |
| Past Service Cost | | <u>.750</u> | <u>1.027</u> |
| Total | | 1.319 | 1.500 |

Comments

In the future the entry age normal cost is expected to increase in proportion to Total System payroll increases. The projected unit credit normal cost is expected to increase at a faster rate than the entry age normal cost.

The past service cost will remain level and then cease after 36 years.

Issue

39.2 Hazardous Duty Classifications for Current Firefighters and Police Officers

Prevailing Party SEBAC

| <u>Employer Costs</u> | <u>FY 90/91</u> | <u>PUC</u> | <u>EAN</u> |
|-----------------------|-----------------|-------------|-------------|
| Normal Cost | | .425 | .471 |
| Past Service Cost | | <u>.488</u> | <u>.529</u> |
| Total | | .913 | 1.000 |

Comments

In the future the entry age normal cost is expected to increase in proportion to Hazardous Duty payroll increases. The projected unit credit normal cost is expected to increase at a faster rate than the entry age normal cost.

The past service cost will remain level and then cease after 36 years.

Issue

48 Reduce "Buy-In" Rate for Municipal Police Officers who join state service and allow purchase to be counted as hazardous duty

Prevailing Party SEBAC

| <u>Employer Costs</u> | <u>FY 90/91</u> | <u>PUC</u> | <u>EAN</u> |
|-----------------------|-----------------|-------------|-------------|
| Normal Cost | | .025 | .028 |
| Past Service Cost | | <u>.029</u> | <u>.032</u> |
| Total | | .054 | .060 |

Comments

In the future the entry age normal cost is expected to increase in proportion to Hazardous Duty payroll increases. The projected unit credit normal cost is expected to increase at a slightly faster rate.

The past service cost will remain level and then cease after 36 years.

Issue

74 Tier I Hazardous Duty Employee Contributions Increased from 2%-4%. Tier II employee contributions increased from 0 to 4% (below social security wages) to Allow for 20 years and out in both Tiers I and II. Increase Tier II benefit to 2.5%

Prevailing Party SEBAC

| <u>Employer Costs</u> | <u>FY 90/91</u> | <u>PUC</u> | <u>EAN</u> |
|-----------------------|-----------------|-------------|-------------|
| Normal Cost | | .100 | .500 |
| Past Service Cost | | <u>.300</u> | <u>.600</u> |
| Total | | .400 | 1.100 |

Comments

In the future the entry age normal cost is expected to increase in proportion to Tier II Hazardous Duty payroll increases. Since all new hazardous duty hires join Tier II, this cost will increase at a greater rate than future Total System payroll increases. The projected unit credit normal cost is expected to increase at a greater rate than the entry age normal cost.

The past service cost will remain level and then cease after 36 years.

Issue

76

Increase State Police Death Benefit for Widows and Children to \$670/month for Spouse and \$300/month for each Child.

Prevailing Party SEBAC

| <u>Employer Costs</u> | <u>FY 90/91</u> | <u>PUC</u> | <u>EAN</u> |
|-----------------------|-----------------|-------------|-------------|
| Normal Cost | | .120 | .140 |
| Past Service Cost | | <u>.030</u> | <u>.043</u> |
| Total | | .150 | .183 |

Comments

In the future the entry age normal cost is expected to increase in proportion to Hazardous Duty payroll increases. The projected unit credit normal cost is expected to increase at a faster rate.

The past service cost will remain level and then cease after 36 years.

Issue

79

Increase Disability Payments to State Police from \$300 to \$360, Spouse's benefit from \$250 to \$300 and from \$250 to \$300 for each child per month.

Prevailing Party SEBAC

| <u>Employer Costs</u> | <u>FY 90/91</u> | <u>PUC</u> | <u>EAN</u> |
|-----------------------|-----------------|-------------|-------------|
| Normal Cost | | .052 | .059 |
| Past Service Cost | | <u>.040</u> | <u>.041</u> |
| Total | | .092 | .100 |

Comments

In the future the entry age normal cost is expected to increase in proportion to Hazardous Duty payroll increases. The projected unit credit normal cost is expected to increase at a faster rate.

The past service cost will remain level and then cease after 36 years.